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EXAMINER	
HEIDEMANN, JASON E	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/593,359	**Applicant(s)** KOKUBUN ET AL.	
	Examiner Jason Heidemann	**Art Unit** 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 February 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8,10-13,16,17 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,10-13,16,17 and 20-22* is/are rejected.

7)☒ Claim(s) *6-8* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 February 2010* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant filed Amendment on 02/24/2010 cancelling Claims 9, 14, 15, 18 and 19, adding Claim 22, and amending Claims 1, 2, 11, and 16. Currently, Claims 1-8, 10-13, 16, 17, and 20-22 are pending. The replacement drawings filed on 02/24/2010 have been accepted, and the objection of the drawings has been withdrawn. The amendment to the specification filed on 02/24/2010 has been entered.

2. Regarding Claim 1, the claim is in a method claim format but there is a limitation stated in the claim, “obtaining periodic motion data”, “obtaining a time range so that the time resolution is within the desired range”, and “controlling an image data collection starting position” that ties these claims to a machine/computer.

3. Regarding Claim 16, the claim is in a system claim, and is statutory since it recites “periodic motion data obtaining means image data for”, “collection condition setting means for”, “image data collection position control means for”, and “image data collecting means for”, which invoke 35 U.S.C 112, 6th Paragraph “means plus language” and hence is statutory.

4. Regarding Claim 22, the claim is in a system claim, and is defined in terms of “a device for displaying a graph”. Given the broadest reasonable interpretation of claim 22 in light of the specification and consistent with a conclusion reached by

one of ordinary skill in the art, the claimed "device " is construed by the examiner as a hardware based device containing software, such as a computer or one or more computer components. Claim 22 is therefore drawn to a statutory machine.

Response to Amendment

The amendment received 02/24/2010 has been entered in full.

Response to Arguments

Applicant's arguments with respect to art rejections to all the pending claims have been considered but are moot in view of the new ground(s) of rejection due to the amendments filed by the Applicant(s).

Priority

This application is a continuation of continuation of International Application No. PCT/JP05/04305, filed 03/11/2005.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) of Japan Application No. JP 2004-110756, filed on 04/05/2004. The certified copy has been filed on 09/18/2006.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) of Japan Application No. JP 2004-080939, filed on 03/19/2004. The certified copy has been filed on 09/18/2006.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Flohr et al. (US PgPub# 2005/0058238 A1, hereinafter Flohr)

As to Claim 22, Flohr teaches an image data collection system for collecting image data in an image data collection range including a periodically moving part of an object to be examined (**Figure 3, Abstract**), the system comprising:

a device for displaying a graph (**Fig.3, el 19**) indicating fluctuations in an estimated time resolution of an image obtained on a part of the object with time information with a projected image of the object, in advance of image data collection (**Fig.5, [0015], [0048], [0055] -[0060], an ECG signal is used to determine the local heart rate prior to data collection in order to adjust the temporal resolution see [0049]-[0052], the ECG data is displayed as shown in Fig. 5**).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

A.) Claims 1-3, 11-13 and are rejected under 35 U.S.C. 103(a) as being unpatentable over Yavuz et al. (US Patent # 6,539,074 hereinafter Yavuz) in view of Flohr.

As to Claim 1, Yavuz discloses an image data collection control method for collecting multiple pieces of image data from an image data collection range including a

periodically moving part of an object to be examined (***Yavuz, abstract), Fig. 10***), the method comprising:

a step of obtaining periodic motion data indicating a change of a periodic motion with time (***Yavuz, Fig.5, Column 10, Lines 1-52, Column 11, Lines 4-10, Columns 2, Lines 5-15, 32-44, 53-59, Column 8, Lines 19-30 the EKG data is collected which provides time info that indicates a change in periodic motion, which allow the sensor to acquire correlated images of a heart beating (periodic motion), the data collected represents the heart in all difference phases of the cardiac cycle (periodic motion with time)***);

a step of obtaining a time range so that the time resolution is within the desired range on an image data collection condition based on the periodic motion data (***Yavuz, Fig.5, Column 10, Lines 43-67, and Column 11, Lines 4-10 the collection time of the electrocardiographic data is correlated to the EKG (periodic motion) which provides time info regarding which projection is correlated or cross-reference to the heart phases in the successive cardiac cycles, this allows images captured to have better time resolution (images of the cycle) and images that correspond to one another to allow reconstruction***);

a step of controlling an image data collection starting position such that the time range matches the image data collection range (***Yavuz, Fig. 12, Fig. 4A and Fig. 4B, Column 6, Lines 16-25, Column 2, Lines 22-44, 63-67, Column 3, lines 1-8, Column 10, Lines 43-67, and Column 11, Lines 4-15, part of the imaging process (image data collection position control step)is positioning the subject on a motorized***

table using control signals from the control system, and the EKG is used to collect time (electrocardiographic) data which is matched with the collected image scans to allow the projections to be related for the reconstruction of stacked slice images or reconstruction of a three-dimensional model) and

a step of starting the image data collection from the image data collection starting position (***Yavuz, Fig.5, Column 10, Lines 1-52, collects the image data at a starting point***). However, Yavuz acknowledges it would be desirable to obtain an improved time resolution, however is silent to obtaining a time range so that the time resolution is within the desired range based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion.

Flohr teaches obtaining a time range so that the time resolution is within the desired range based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion (***Flohr, [0007], [0008], [0014] – [0018], where the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)***). Additionally, Flohr discloses a starting position such that the time range matches the image data collection range (***Flohr, [0048]-[0052]***). Flohr performs the adaptive choice both of the number of data intervals, i.e. movement cycles, and of the duration of the data interviews in order to collect an image with sufficient object length (e.g. the heart) with the desired good spatial resolution and sufficient temporal resolution as described by Flohr at paragraphs [0013], [0014]. Flohr's "adaptive choice both of the number of data intervals" of the CT

apparatus serves to overcome the complications for the imaging a heart (***Flohr, [0008]-[0010]***).

It would have been obvious to one of ordinary skilled in the art at the time of inventions to modify the method of Yavuz, by including the necessary hardware and software to perform adaptive choice both of the number of data intervals, which would include the operation on obtaining a time range so that the time resolution is within the desired range based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion according to the teaching of Flohr.

The modification to Flohr could be made by known techniques, with no changes to the individual technique of Yavuz, and the results would be highly predictable.

The combination has a reasonable expectation of success in that the modifications can be made using conventional and well known engineering and/or programming techniques, the adaptive choice both of the number of data intervals taught by Flohr is not altered and continues to perform the same function as separately, and the resultant combination produces the highly predictable result of imaging a periodic moving object (for example, a heart) with an improved time resolution, where the time range is based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion.

As to Claim 2 the combination of Yavuz and Flohr teach the image data collection control method according to claim 1, further comprising: a projected image

obtaining step of obtaining a projected image of the object (***Yavuz, Fig. 10, el 1010, Column 14, Lines 21-40, collect a projected image of an object***), and an image data collection range designating step of designating the image data collection range based on the projected image (***Yavuz, Fig. 10, Column 14, Lines 21-40, el 1020, determines to collect a set of projection view image at selected view angles of an object based on the projection data***).

As to Claim 3, the combination of Yavuz and Flohr teach the image data collection control method according to claim 2, wherein in the image data collection range designating step, the image data collection range is designated by designating a starting position and an end position of collection of the image data in the projected image (***Flohr, [0007], [0008], [0014] – [0018], where the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)***).

As to Claim 11, the combination of Yavuz and Flohr teach the image data collection control method according to claim 1, further comprising: a step of determining a suitable change of the periodic motion data such that the image data of the image data collection range has the time resolution within the desired range, and a step of displaying a change of the periodic motion data with time and the suitable change range (***Yavuz, Column 10, Lines 33-50, Column 11, Lines 30-50, using the method, data sectoring where the projection view from multiple heart cycles are correlated***

(Suitable change) to a particular heart phase by cross-referencing the timing formation from the EKG (the periodic motion data) , the reconstruction of a single slice (image data collection range) though the heart with fine resolution in time (time resolution) (Flohr, [0007], [0008], [0014] – [0018], estimates the time resolution based on the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)).

As to Claim 12, the combination of Yavuz and Flohr teach the image data collection control method according to claim 11, wherein a combination of the suitable change and a speed of the relative movement is calculated in the image data collection condition setting step, and the image data collection range and a collection position of the image data are relatively moved in the image data collection position control step (***Flohr, [0007], [0008], [0014] – [0018], estimates the time resolution based on the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)***).

As to Claim 13, the combination of Yavuz and Flohr teach the image data collection control method according to claim 11, wherein the periodic motion data obtaining step is repeated until the change of the periodic motion data fails below a predetermined value (***Yavuz, Fig. 11 A -C, Column 10, Lines 43-67, Column 15, Lines 20-40, Column 2, Lines 22-44, Lines 63-67, Column 3, Lines 1-8, and Column***

11, Lines 4-15, EKG collects the motion data (electrocardiographic) which is added to the collected image scans for the duration that the scan was collect to provide information to correspond other scans with the same cardiac period, the data would not be stored after the collection has ended, therefore it is inherent that the recording of the EKG signal is repeated until the cardiac cycle ends (or the periodic motion falls below (enters a new cycle))).

As to Claim 16, Yavuz teaches an image data collection system for collecting multiple pieces of image data from an image data collection range including a periodically moving part of an object to be examined, the system comprising:

a periodic motion data obtaining means for obtaining periodic motion data indicating a change of a periodic motion with time (**Yavuz, Fig.5, Column 10, Lines 1-52, Column 11, Lines 4-10, Columns 2, Lines 5-15, 32-44, 53-59, Column 8, Lines 19-30 the EKG data is collected which provides time info that indicates a change in periodic motion, which allow the sensor to acquire correlated images of a heart beating (periodic motion), the data collected represents the heart in all difference phases of the cardiac cycle (periodic motion with time)**);

an image data collection condition setting means for obtaining a time range so that the time resolution is within the desired range on an image data collection condition based on the periodic motion data (***Yavuz, Fig.5, Column 10, Lines 43-67, and Column 11, Lines 4-10 the collection time of the electrocardiographic data is correlated to the EKG (periodic motion) which provides time info regarding which***

projection is correlated or cross-reference to the heart phases in the successive cardiac cycles, this allows images captured to have better time resolution (images of the cycle) and images that correspond to one another to allow reconstruction); and an image data collecting means for starting the image data collection from the image data collection starting position(***Yavuz, Fig.5, Column 10, Lines 1-52, collects the image data at a starting point***). However, Yavuz acknowledges it would be desirable to obtain an improved time resolution, however is silent to obtaining a time range so that the time resolution is within the desired range based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion within a desired range, and an image data collection position control means for controlling an image data collection and starting position data such that the time range matches the image data collection.

Flohr teaches obtaining a time range so that the time resolution is within the desired range based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion (***Flohr, [0007], [0008], [0014] – [0018], where the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)***). Additionally, Flohr discloses a control means for controlling an image data collection and starting position data such that the time range matches the image data collection (***Flohr, [0048]-[0052]***). Flohr performs the adaptive choice both of the number of data intervals, i.e. movement cycles, and of the duration of the data interviews in order to collect an image with sufficient object length (e.g. the heart) with the desired good spatial resolution and

sufficient temporal resolution as described by Flohr at paragraphs [0013], [0014]. Flohr's "adaptive choice both of the number of data intervals" of the CT apparatus serves to overcome the complications for the imaging a heart (***Flohr*, *[0008]-[0010]***).

It would have been obvious to one of ordinary skilled in the art at the time of inventions to modify the system of Yavuz, by including the necessary hardware (including a variable speed table) and software to perform adaptive choice both of the number of data intervals, which would include the operation on obtaining a time range so that the time resolution is within the desired range based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion according to the teaching of Flohr.

The modification to Flohr could be made by known techniques, with no changes to the individual technique of Yavuz, and the results would be highly predictable.

The combination has a reasonable expectation of success in that the modifications can be made using conventional and well known engineering and/or programming techniques, the adaptive choice both of the number of data intervals taught by Flohr is not altered and continues to perform the same function as separately, and the resultant combination produces the highly predictable result of imaging a periodic moving object (for example, a heart) with an improved time resolution, where the time range is based also on a relationship among a time resolution of an image obtained, image data collection conditions and periodic motion.

As to Claim 20, the combination of Yavuz and Flohr teach the image data collection system according to claim 16, wherein the image data collecting means is an X-ray CT apparatus comprising:

an X-ray source for emitting an X-ray (*Yavuz, Fig.1, el 114, Column 7, lines 20-30*),, an X-ray detector which is opposed to the X-ray source with the object being interposed between the X-ray source and the X-ray detector and detects the x-ray to output X-ray transmission data (*Yavuz, Fig.1, Fig. 7,Fig. 3, el 136, Column 7, Lines 20-30,Column 12, Lines 20-30*),, a rotating means capable of rotating with the X-ray source and the X-ray detector, a table on which the object is laid (*Yavuz, Fig.1, Fig. 7,Fig. 3, Column 7, Lines 50-65, Column 12, Lines 20-30, Lines 54-64*), a table controller for controlling a table moving speed for moving the table (*Yavuz, Fig.1, Fig. 7,el 746, Fig. 3, Column 7,lines 30-40*) (Flohr, [0007], [00015], [0034], [0035], [0062]), an image processing means for generating a tomogram of the object based on the X-ray transmission data (*Yavuz, Fig.1, Column 2, Lines 6-15, Column 8, Lines 10-30*), and a display means for displaying the tomogram (*Yavuz, Fig.1, el 142, 140, Column 8, Lines 10-30*), the periodic motion data obtaining means is a heart rate meter for measuring and obtaining a heart rate of the object (*Yavuz, Fig.1, el 160, Column 10, Lines 42-52, Column 11, Lines 4-10, Columns 2, Lines 5-15, 32-44, 53-59, Column 8, Lines 19-30, EKG unit, is used to measure the heart rate of the patient*),

the image data collection condition setting means calculates a combination of a change of the periodic motion data and the table moving speed to obtain the desired time resolution (*Yavuz, Column 5, Lines 36-54, 66-67, Column 6, Lines 1-15, Lines 44-54,*

Column 7 Lines,29-39, Column 12, Lines 54-64), and the table controller moves the table according to the table moving speed (*Yavuz, Column 5, Lines 36-54, 66-67, Column 6, Lines 1-25, Lines 44-54, Column 7 Lines,29-39, Column 12, Lines 54-64, a controller sends a signal to the motorized bed to translate the table to move the subject relative to the source*) (Flohr, [0007], [00015], [0034], [0035], [0062]).

As to Claim 21, the combination of Yavuz and Flohr teach the image data collection system according to claim 16, wherein the image data collecting means is a magnetic resonance imaging apparatus (***Yavuz, Column 2, Lines 15-22, Column 8, Lines 11-20***) including:

a control unit having a predetermined scanning sequence (***Yavuz, Column 8, Lines 11-20***),

a magnetic field generating means for generating, in response to control of the control unit, a gradient magnetic in which the object is laid (***Yavuz, Figure 1, Column 8, Lines 11-20, and Lines 32-60, as seen in Figure 1, a object (patient) is laid on a table, and the el 114 induced a magnetic field, during data acquisition the sequence of measurement* the magnetic field gradients are varied according to the particular localization method being used**), and

a signal processing means for measuring an NMR signal generated from the object and imaging the signal (***Yavuz, Figure 1, Column 8, Lines 11-20, and Lines 32-60, converts the MRI (NMR) signal into images***),

and the periodic motion data obtaining means obtains a body movement navigation signal of the object (***Yavuz, Fig.1, el 136, 126, Fig.5, Column 10, Lines 43-67, Column 11, Lines 4-10, Column 16, Lines 1-22, Column 10, Lines 42-52, Column 15, Lines 17-32, the EKG data is collected along with (synchronous) the helical scan data (image forming data), then the collection time of the electrocardiographic data is correlated to the EKG will provides time info (time resolution with a desired range) to allow acquisition of projections that are correlated or cross-reference to the heart phases to allow reconstruction on the projections***). However, Yavuz is silent to a magnetic field generating means for generating, in response to control of the control unit, a gradient magnetic field and a high frequency magnetic field in a static magnetic field space in which the object is laid.

It would have been obvious to one of ordinary skilled in the art at the time to include the use of a method of MRI imaging by generating a gradient magnetic field and a high frequency magnetic field in a static magnetic field space in which the object is laid, since this is a well established method of obtaining MRI images. One of ordinary skilled in the art would have been motivated to incorporate the feature to acquire images of greater contrast between tissues and the body as compared to CT, which is useful in cardiovascular imaging.

B.) Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Flohr and further in view of Siemens Medical (HeartView CT Application Guide

by Siemens Medical, Software Version *syngo* CT 2005A, ©2002-2004, Siemens AG Order No. C2-023.630.11.03.02 Printed in Germany 09/04, hereinafter Siemens)).

As to Claim 4, the combination of Yavuz and Flohr teach the image data collection control method according to claim 2, wherein the image data collection condition setting step includes, before the image data collection range designating step, a time resolution estimating step of estimating a fluctuation in a time resolution of the image data with time based on the periodic motion data, and in the image data collection range designating step, (***Flohr, [0007], [0008], [0014] – [0018], estimates the time resolution based on the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)***). Further, Flohr teaches the superimposing of information onto a graph found in Fig 5. However, the combination is silent to the superimposing of a time resolution graph and the projected image.

Siemens teaches the importance of superimposing or overlaying relevant information onto a medical image (see pages 140, 106, 29, 38, 43), the use of overlaying graphics and other images over the medical images is to assist the user to make aware of information by selection, highlighting, and/or the presentation of information.

It would have been obvious to one of ordinary skilled in the art at the time of inventions to modify the method of the combination of Yavuz and Flohr, by including a step of superimposing the time resolution graph of Flohr and combining that image with

the CTimage collected by Yavuz following the motivation of Siemens for combining relevant information with the CT image. The modification to the combination of Yavuz and Flohr could be made by known techniques, with no changes to the individual technique of Siemens, and the results would be highly predictable (the graphs superimposed onto the CT image for display).

The combination has a reasonable expectation of success in that the modifications can be made using conventional and well known engineering and/or programming techniques, the superimposing of one image onto another is well known in the field, as evidenced by Siemens, further Siemens is not altered and continues to perform the same function as separately, and the resultant combination produces the highly predictable result of combining/superimposing the time resolution information onto the CT image.

As to Claim 5, the combination of Yavuz, Flohr, and Siemens teach the image data collection control method according to claim 4, wherein in the image data collection range designating step, the desired time resolution range in the time resolution graph is superimposed so as to correspond to the image data collection range in the projected image (**Siemens pages 140, 106, 29, 38, 43, superimposing or overlaying relevant (corresponding) information onto a medical image**).

As to Claim 10, the combination of Yavuz, Flohr, and Siemens teach the image data collection control method according to claim 4-, wherein in the image data

collection position control step, the image data collection range and the image data collection position are relatively moved so as to keep a positional relationship between an elapsed time in the time resolution graph and the image data collection range in the projected image, and the relative movement and the image data collecting step are simultaneously performed (***Flohr, [0007], [0008], [0014] – [0018], estimates the time resolution based on the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)***).

As to Claim 17, the combination of Yavuz and Flohr teach the image data collection system according to claim I6, wherein the image data collection condition setting means estimates a fluctuation in the time resolution of the image data with time based on the periodic motion data before designating the image data collection range (***Flohr, [0007], [0008], [0014] – [0018], estimates the time resolution based on the collection conditions include (table speed), temporal resolution, periodic movement (for example of the heart)***). Further, Flohr teaches the superimposing of information onto a graph found in Fig 5. However, the combination is silent the image data collection condition setting means superimposes a time resolution graph and the projected image, the time resolution graph indicating the fluctuation in the time resolution of the image data.

Siemens teaches the importance of superimposing or overlaying relevant information onto a medical image (see pages 140, 106, 29, 38, 43), the use of

overlaying graphics and other images over the medical images is to assist the user to make aware of information by selection, highlighting, and/or the presentation of information. (See same motivation for Claim 4 above)

Allowable Subject Matter

Claims 6, 7, and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Yavuz (US 6,539,074) Teaches a tomographic image collection and generation apparatus which has the ability to extract implicit information from time dependent aspects of volumetric projection data corresponding to multiple data acquisition cycles, which allows the imaging of a patient's heart, or portion of the heart, or at a selected phase in the cardiac cycle.

Pan et al. (US PGPub 2003/0163039) Teaches a medical imaging system that includes a variable speed patient positioning table, the table has a plurality of table speeds, which improves the speed of imagery and reduces the artifacts due to motion during acquisition of data from a selected region of a patient's heart.

Flohr et at. (US PGPub 2005/0058238) discloses a method, and system for examining a body region of an examination object, which body region performs a periodic movement, further the method provides a way of changing the time resolution for the imaging based on the heart rate. The diagnosing method uses computed tomography and constructs an image of heart, by acquiring measurement data from X-ray detector in time interval corresponding to tense of cardiac cycle determined from electrocardiogram signal. The image of a periodically moving object such as heart is constructed, by acquiring measurement data from the X-ray detector in the time interval corresponding to tense of cardiac cycle determined from the electrocardiogram signal.

Siemens Medical (HeartView CT Application Guide by Siemens Medical, Software Version *syngo* CT 2005A, ©2002-2004, Siemens AG Order No. C2-023.630.11.03.02 Printed in Germany 09/04, hereinafter Siemens)), is a clinical application package specifically tailored to cardiovascular CT studies. The package gives Siemens Medical Systems multislice CT scanners the ability to retrospectively visualize the heart and coronary arteries from data obtained during an ECG-gated study. The program synchronizes an ECG tracing with a CT acquisition, reconstructing data between the R-R intervals, when the heart is at relative rest.

Regarding Claim 6, the prior art of record, all fail alone or in combination to disclose or render obvious “at least points ranging from a start point corresponding to a start time of image data collection in the time resolution graph to an end point

corresponding to a stop time of image data collection are respectively superimposed on positions ranging from a starting position to an end position of image data collection in the projected image" in combination with the other respective claim limitations.

Regarding Claim 7, the prior art of record, all fail alone or in combination to disclose or render obvious "input is received for designating or changing at least one of a position of the time resolution graph and a position of a part of the graph, and at least one of the image data collection range and the desired time resolution range is designated or changed based on the input" in combination with the other respective claim limitations.

Regarding Claim 8, the prior art of record, all fail alone or in combination to disclose or render obvious "a numeric value indicating a position on the projected image is displayed, the position corresponding to at least one of points of the time resolution graph, input is received to change the numeric value, and relative positions of the time resolution graph, at least one of the points of the graph, and the projected image are changed based on the input" in combination with the other respective claim limitations.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See

MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Heidemann whose telephone number is (571)-270-5173. The examiner can normally be reached on Monday - Thursday/7:30 A.M. to 5:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 571-272-7778. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 571-273-8300 for After Final communications. TC 2600's customer service number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Heidemann/ 06/02/2010
Examiner, Art Unit 2624

/Andrew W Johns/
Primary Examiner, Art Unit 2624